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times out of many trials, showing that generally the successful double staining by the above method is accidental, yet anticipating practical success, should we find the exact proportion according to which the stains should be mixed, even going so far as to insure success by the shortened process, recommended by the above experiments, in the case of the Magdala Red.

As to the reagents, an apparent objection to the use of fused zinc chloride instead of calcium chloride may be that the former on being fused again after absorption of alcohol seems to allow this to come off with great difficulty, so that the mass chars to a blackish substance, because of separation of carbon. After second fusion the zinc chloride does not seem to reabsorb alcohol as well as before, possibly because basic zinc chlorides are formed and some of the chlorine goes off as ethyl chloride (C_2H_5Cl). Addition of hydrochloric acid to decompose these basic compounds supposed to be found does not improve matters much.

The fused mixture of zinc chloride and calcium chloride in equal parts does not behave in this way; no charring whatever is noticed no matter how high the temperature is raised in fusion. Since moreover, the mixture is also more active we may conclude that it is the best dealcoholizer of them all. Whichever of these salts or mixtures of them is used, the fusion after the first absorption of alcohol may be made in either an iron or a porcelain vessel. Zinc chloride and mixtures of it show a tendency to absorb iron from the vessel during fusion, this iron appearing to be held in the colloidal form. This however does not deteriorate the absorptive power, though the fused mass appears to be steel gray in color. Care should be exercised to prevent the escaping alcohol vapors from catching fire in fusion, as charcoal is deposited, giving the preparation an unsightly appearance.

ERIGERON IN NORTH DAKOTA.

By J. Lunell.

In the year 1818 Nuttall published in Vol. II. of "The Genera of North American Plants" on p. 147 and 148 two new *Erigeron* species, *E. asper* and *E. glabellus*. During the last 25 years there has been considerable confusion as to what plants

Nuttall actually meant when introducing these species names, and Asa Gray in his Synoptical Flora suppressed *E. asper*. Dr. P. A. Rydberg in his Flora of Colorado retained *E. glabellus* (as to the name), but the manuals suppressed it and accepted *E. asper*, as they did not believe in the existence of two separate, independent species. The plains of Missouri in North Dakota furnished the types for these two Nuttallian species. In taking up the subject of them as they present themselves to me in their home country, I acknowledge in the first place my debt to Dr. Edward L. Greene for his valuable advice and suggestions and his willingness on his own initiative to place precious material at my disposal.

1. *Erigeron asper* Nutt.

Nuttall ranges *E. asper* (l. c.) under "§1. Stem simple," and this is his original description:

"3. **asperum*. Hirsutely scabrous; stem about 2-flowered, slender; leaves lanceolate-acute and entire; flower hemispherical, white. HAB. On the plains of the Missouri. Flowering in August. Stem solitary, scarcely 12 inches high, covered with short and very hispid hairs in common with the leaves. Leaves narrow; radical ones spatulate-lanceolate. Peduncles 2 or 3, subterminal, the lateral one longest". . . . "Rays numerous, white. Pappus double, interior simply pilose, of about 20 rays, much longer than the smooth seed, slightly rufescent."

Dr. J. F. Brenckle of Kulm, La Moure County, of this state, has kindly withdrawn from his herbarium and lent me some daisy material representing no doubt the real plant of Nuttall. Two plants collected by him on June 20, 1903, part of his sheet numbered 38, from low prairie at Kulm, and four small plants out of five from another sheet collected by O. A. Stevens at Valley City, on June 8, 1910, the last ones defined by the collector as *E. caespitosus* Nutt., have the "hirsutely scabrous" indument and also the "white rays" as outlined in Nuttall's description. The stems have from 1 to 4 flowers. Nuttall's plant was collected in August, and though I have no doubt that some belated individuals would linger into that month, the real flowering period for this species and its allies is June and the first part of July. The Valley City plant belongs to the Red River of the North basin (Sheyenne River), but the Kulm plant is from a territory watered by the James River, a tributary to the Missouri.

A hundred miles further northward there is an ally of this daisy, modified as follows:

2. **Erigeron multicolor** sp. nov.

Caules 1–3, simplices, floribus 1–5 ornati, graciles, 5–30 cm. alti, una cum foliis tenuiter vel modice pilis mollibus repandis appressis vestiti. Folia radicalia spatulato-lanceolata, in petiolos longos alatos sensim attenuata, integra vel dentata. Folia caulina angusta, lanceolato-acuta, integra, inferiora saepe 10 cm. longa vel longiora, usque similitudinem bractearum sensim reducta, vel folia caulina omnia ad bracteas accedentia. Flores semisphaerei, diametro inter extremitates radiorum peripherales 2–2.5 cm., bracteis exterioribus obscuris hispidis, radiis numerosis albis vel rubicundis vel lavandulaceis.

Stems 1–3, simple, 1–5-flowered, slender, 5–30 cm. high, in common with the leaves scantily or moderately covered with soft hairs, turned upwards and appressed. Radical leaves spatulate.-lanceolate, gradually tapering to long, winged petioles, entire or dentate. Stem leaves narrow, lanceolate-acute, entire, the lower often 10 cm. long or more, gradually reduced in size until bract-like, or all the stem leaves resembling bracts. Flowers hemispherical, 2–2.5 cm. in diameter between the distant ends of the rays, with dark, hispid outer bracts and numerous white to pink or lavender colored rays, often of as many different shades as the plant has flowers.

Common in moderately damp pasture land and in similar localities where the grass is scanty. I have one typical sheet of fully developed plants collected as early as June 8, 1901, and my second type sheet is dated June 24, 1906, both from Leeds, Benson County.

I have several specimens collected within a narrow radius of Leeds showing a wide difference in indument, size of plants, and size and color of flowers. Whatever possibilities these offer as new matter, they have to be corroborated by a close study of additional specimens to be collected during the coming season.

The next species to be taken into consideration is

3. *Erigeron glabellus* Nutt.

The following is the author's own description (Genera l. c.): "6. *glabellum. Perennial; leaves linear-lanceolate, entire, smooth and acute; radical long petiolate, spathulate-lanceolate and nerved; upper part of the stem and hemispherical calix pubescent; stem 3 to 5-flowered, peduncles axillar and terminal. HAB. On the plains of the Missouri, (around Fort Mandan, abundant). Flowering in August. Stem 12 to 13 inches high, simple, smooth below; lower leaves of the stem much attenuated below, 3 or 4 lines wide, smooth; peduncles about 2 inches long, pubescent; flower the size of a daisy, pale blue; rays very numerous. Seeds smooth; pappus double, exterior whitish, interior short, simply pilose and rufescent."

This is decidedly a plant of late summer, commencing to flower in the last part of July, when *E. asper* is fading, and it lasts until it is killed by the early frosts. Stems solitary or several, ascending, smooth below, sparingly pubescent midways, and more densely so in the upper part, usually with short, spreading, or even retrorse hairs, and 1 to 5-flowered. Some radical leaves are acute, others obtuse, and all have a pair of lateral nerves running parallel to the margin for the major part of its length. The leaf margins are smooth or sparingly and irregularly ciliate. The author's "size of a daisy" must be 2–3 cm. in diameter between the peripheral ends of the rays. The color of the rays is the same for all flowers of the same plant, but varies for different plants, and besides the pale blue ordinary shade an admixture of lilac seems to be just as prevalent. This species is extremely pretty, especially when its flowers are well developed, and no daisy within this state can successfully rival it.

I am just looking at a beautiful specimen of Dr. Greene's which he collected early in its season (July 22) in the summer of 1890, at Carberry, Manitoba, as stated in Leaflets II. (1912) p. 207. It is perhaps somewhat taller and more luxuriant than my North Dakotan plants would be at such an early date, and its rays have adopted a rather different natural shade, but nobody can or would attempt to question its genuineness.

4. *Erigeron pumilus* Nutt.

This is a plant preferring the gravelly plains and the high, gravelly hills, and comes from the region whence Nuttall had it (Genera II. (1818), p. 147).

5. **Erigeron obscurus** sp. nov.

Caules 1–4, erecti et rigidi, 2–4 dm. alti, inferne fusci, usque apicem paene simplices, deinde corymboso-ramosi, pilis albis densis diffusis vel adscendentibus infra vestiti qui inflorescentiam versus molliores et appressi fiunt. Folia obscure viridia, pubescentia densa, molli, appressa vestita, basilaria et in caule dimidio inferiore spatulata vel oblonga vel lanceolata, petiolis perlongis, strigosis, integra vel remote serrata; folia caulina superiora lineari-lanceolata, amplitudine sensim reducta, summa saepe bracteis tantum similia. Flores 0.5–1 cm. diametro, radiis albis 2–4 mm. longis, 0.5 mm. latis, bractearum series exterior pilis diffusis vel appressis hispidulosior. Inflorescentia corymboso-cymosa, angustior et congesta.

Stems 1–4, erect and stiff, 2–4 dm. high, very leafy, dark brown in the lower part, simple almost to the top, then corymbosely branched, densely covered with white, spreading or ascending hairs below, which toward the inflorescence become more soft and appressed, almost velvety to the touch. Leaves of a dull, dark green, with a dense, soft, appressed pubescence, at the base and on the lower half of the stem spatulate or oblong or lanceolate with strigose petioles of their half or whole length, entire or sparingly serrate; upper cauline leaves linear-lanceolate, gradually reduced in size, the uppermost often mere bracts. Flowers 0.5–1 cm. across, with white rays 2–4 mm. long, 0.5 mm. wide, and the outer series of bracts rather hispidulous with spreading or appressed hairs. Inflorescence corymbosely cymose, rather narrow and congested.

This daisy was found by the writer on July 17, 1910, in a natural meadow along a coulée in the vicinity of Leeds, Benson County. As it is a near relative of *E. strigosus* Muhl., it was at first suspected of being identical with this species and introduced with grass seed. But at close inspection its different indument on stems and involucral bracts, its dull green color, its crowded foliage and inflorescence and its small rays (4–7 mm. long in *E. strigosus*) were found to be minute indument on the stem, the light green, distant leaves, the glabrate involucral bracts, the patulous inflorescence and the taller plants of this weed, so far undiscovered in this vicinity. I believe that this daisy of ours is a native western plant.

6. *Erigeron philadelphicus* L.

Common in wet soil. A very rank, large and lax form grows in rich, well drained soil in the Turtle Mountains. Sp. Pl. 863 (1753).

7. *Erigeron racemosus* Nutt.

Occasional along water courses. Trans. Am. Phil. Soc. 7: 312 (1841).

Leeds, North Dakota.

A QUESTION OF NOMENCLATURE.

By J. A. Nieuwland.

After having called attention to the fact of the priority of Schmidel's name *Thelypteris** over Adanson's *Dryopteris* or Schwartz's *Aspidium*, on the basis of 1753 as the "starting point" of nomenclature, several objections by well known botanists were made to me supposedly founded on certain codes or opinions. Followers presumably of the Vienna Code claimed that Schmidel's generic name like Adanson's was not made accompanied by the simultaneous publication of a *binary specific name, or without any direct reference to such in another work* and designating in the latter case the referred binary as type of the new genus As far as I can find on consulting botanists it would seem that the followers of the so-called American Code will accept the validity of the genus on the latter of the two alternatives, or even when it is perfectly clear that a given plant is meant whether reference to any binary is made or not.

For the followers of the American Code, a system typified by Britton's Manuals and other works emanating from the New York Botanical Garden, there can be no possible objection to *Thelypteris;* for Schmidel made an indubitable and unmistakable reference in synonymy to the first edition of Linnaeus' Species Plantarum, as also the same in the tenth edition of the Systema Naturae, actually quoting the Linnaean "specific name."†

The makers of the Vienna Code, however, have arbitrarily decided that since even the Linnaean generic diagnoses were

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* Am. Midland Naturalist, Vol. I., p. 224, etc.

† "Acrostichum fronde pinnata, pinnis pinnatifidis integerrimis Linn. Spec. p. 107. N. 21. Syst. Nat. Ed, X. p. 1320. n. 21."